



REPAIR OF DISTAL BICEPS TENDON RUPTURE - USING THE ENDOBUTTON



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Most authors currently recommened an anatomic repair of the rupture distal biceps tendon report a new technique of distal biceps tendon repair using an internal button - the Endobutton (Acufex).

OPERATIVE TECHNIQUE

Exposure

A transverse skin incision 2 cm distal to the elbow skin crease was made and the lateral antebrachial cutaneous nerve was protected. In acute cases the the retracted biceps tendon and the tendon tract were readily identified. With the elbow in full extension and supination, the radial tuberosity was exposed. A cortical window to accommodate the tendon was made with a burr. A drill was advanced across the opposite cortex.

Fixation of tendon to the Endobutton

The Endobutton is a 4 x 12mm flat titanium implant developed for graft fixation of ACL reconstruction.⁴

The tendon is fixed to the Endobutton with Number 5 Ethibond Bunnell sutures placed in the medial and lateral margins of the tendon (Fig 1).

In th one late case an extensive anterior approach was performed and a semitendonosis graft interwoven through the tendon. The Endobutton was then attached to the graft.

Advancement of the Endobutton

A straight-eyed needle (trailing and leading) was advanced through the drill hole and through the posterior forearm (Fig 2a). Tension on the lead suture delivers the Endobutton, to the cortical window (Fig 2b). Tension on the trailing suture will lock the Endobutton on the dorsal radius (Fig 2c). Fluoroscopy was used to monitor the position.¹

Post-operative management

A plaster back slab was removed after one week and the patient provided with a sling and advised that the elbow can be mobilised. No heavy lifting for three months.

RESULTS

We performed this technique on 11 acute ruptured and 1 delay presentation. All patients were satisfied, returned to activities and had return of grade 5 strength. There were no neurological injuries, synostosis or infections. Average flexion was from 3° to 143° with 81° supination and 76° pronation.

DISCUSSION

Simple Technique:

The only surgery performed in the depth of the wound is the preparation of the radial tuberosity, which is performed with the elbow in full extension and supination.

The tendon is sutured to the Endobutton. At this point it is "prefabricated" and the Endobutton delivers and locks the tendon into position.

Synostosis:

R-U synostosis has been reported with the two-incision technique but not with an anterior approach.^{3,5,7}

Nerve Injury:

Our dissections and experience demonstrate the anterior approach is safe once in the inflatory bursa, it is necessary to expose the neurovascular structures.

Strength:

The Endobutton is robust and easily accommodates number 5 Ethibond to allow active mobilisation.



Fig 1. Endobutton attached with two No 5 Ethibond Bunnell sutures.

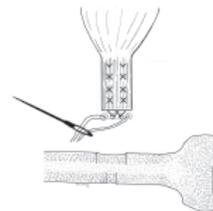


Fig 2a. "Prefabricated" tendon prepared for proximal radius.

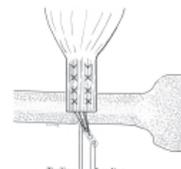


Fig 2b. Leading suture advances Endobutton and tendon.

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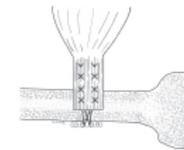


Fig 2c. Trailing suture locks Endobutton into sub-periosteal space.

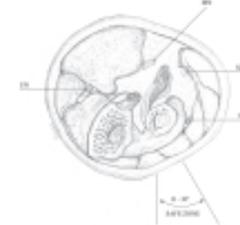


Fig 3. Cross-section of proximal forearm with relationship of major nerves to biceps tendon. Steinman pin advanced through posterior forearm

TECHNIQUE	Author	Incisions	Tendon Position	Radial N Injury?	R-U Synostosis	Skin Necrosis	Early Motion	Simplicity
2-Incision Technique	Boyd and Anderson, Morrey	2	Osteoperiosteal flap	-	+	-	-	-
External Button	Louis, Norman	1	Medullary	+	-	+	-	+
Suture Anchor	Barnes, Lintner	1	Surface	-	-	-	-	-
Endobutton	Bain	1	Medullary	-	-	-	+	+

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